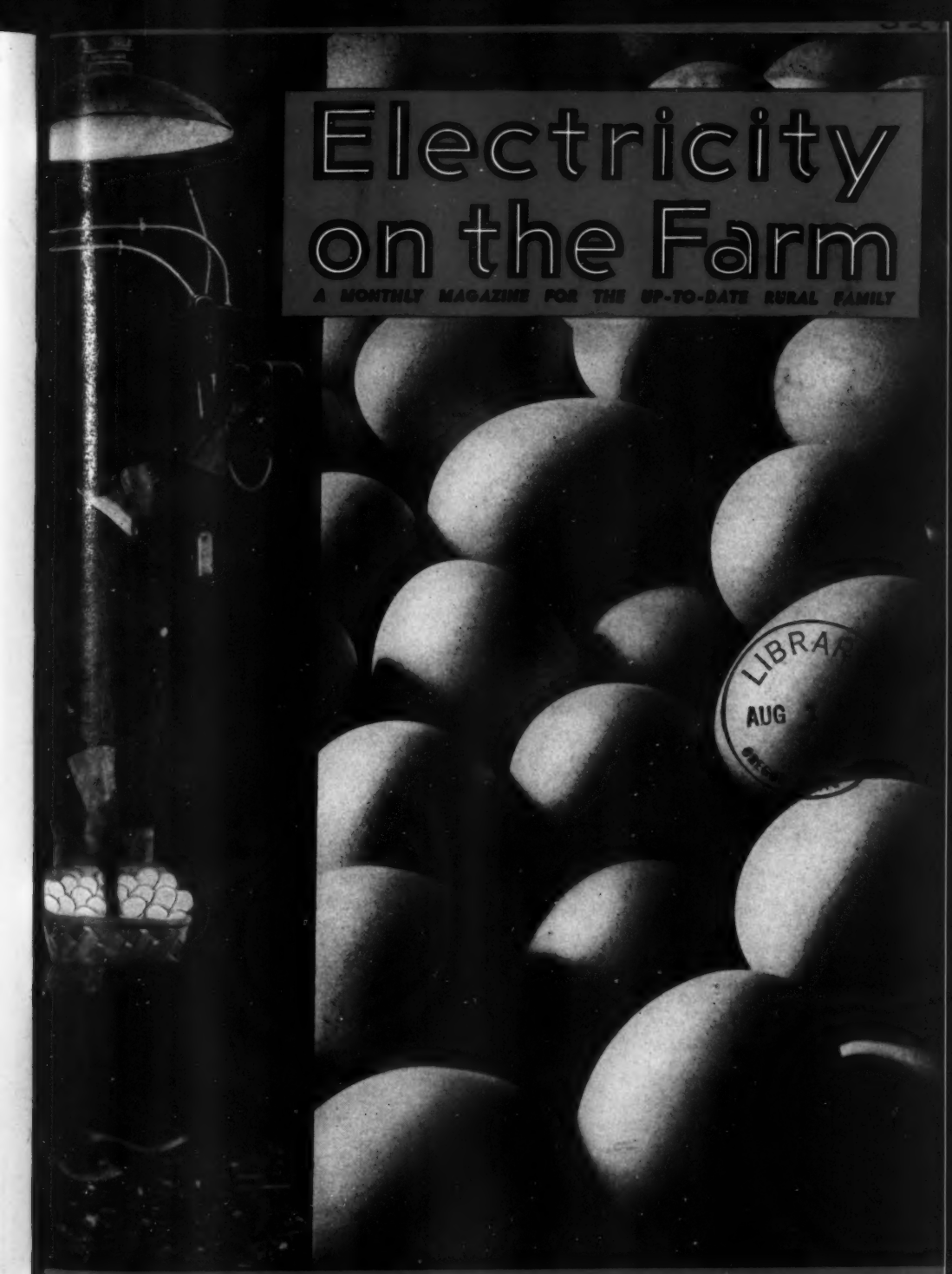

Electricity on the Farm

A MONTHLY MAGAZINE FOR THE UP-TO-DATE RURAL FAMILY

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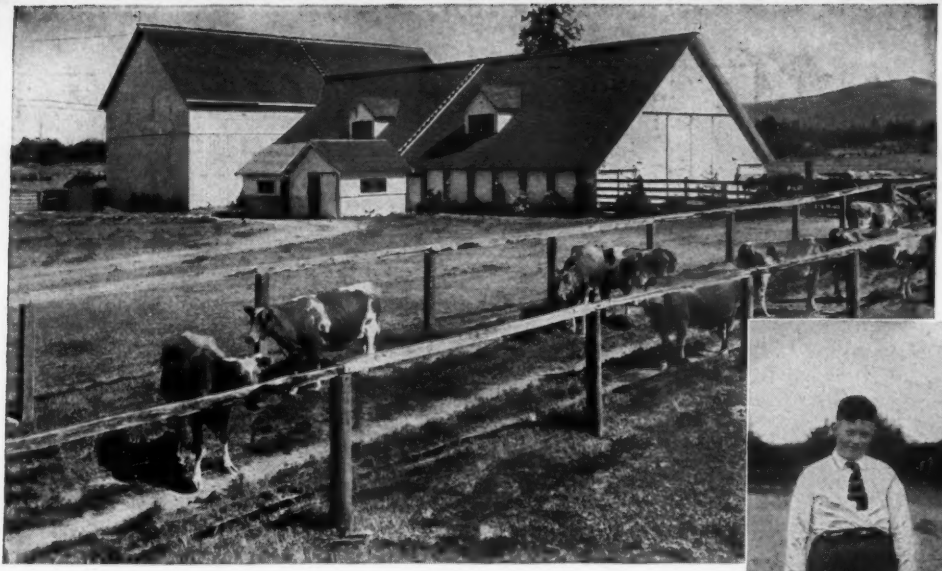
IN THIS ISSUE—A Cyclone Cellar for Perishable Crops—When Times Got Tough Geo. Hudson Bought a Milker—Increasing an Inadequate Water Supply—Electrical Housekeeping and Other Regular Features.

FRONT COVER TITLE CONTEST—SEE INSIDE BACK COVER FOR RULES AND AWARDS



Mr. Gross... justly proud... modern el... dair...

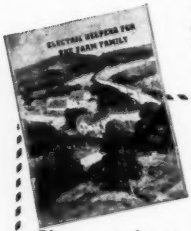
Ernest Grossniklaus and his son, Chester, enjoy life on an electrified farm

"I get a premium of 5¢ per pound of butter fat since installing electricity"

says ERNEST R. GROSSNIKLAUS
TWIN BROOKS DAIRY FARM
CLALLAM COUNTY, WASHINGTON

"I WOULDN'T try to run my dairy without electricity. Over a period of years since I've been using it, the bacteria count runs between 700 and 2000. The secret is clean barn conditions, but more important, plenty of scalding water to sterilize utensils and immediate cooling of the milk to 40 degrees. I say that electricity more than pays for itself by making it possible to market higher-priced products. It also saves a lot of drudgery and time and makes working conditions much more pleasant."

MR. GROSSNIKLAUS has boosted his daily profits because he has wisely turned much of his work over to electricity. He called on the Puget Sound Power & Light Company for advice on where it would pay him the most profits. He uses a hot-water heater, milk cooler, water system, cold storage box, and miscellaneous motors in the shop and barn. In the home, Mrs. Grossniklaus gets her share of benefits from electric service with good lighting, electric cooking and refrigeration, radio, washer, and plenty of running hot water.



You, too, can profit from the use of General Electric equipment on your farm. You will find valuable information about the use of electric equipment on the dairy farm in General Electric's new farm book. May we mail you a free copy?

Mrs. Grossniklaus gets her share of benefits, too. Notice the G-E Triple-Thrift refrigerator in the dining room

General Electric Company
Dept. 6A201
Schenectady, N. Y.

Please send me a copy of your Farm Book, GED-641.

Name.....

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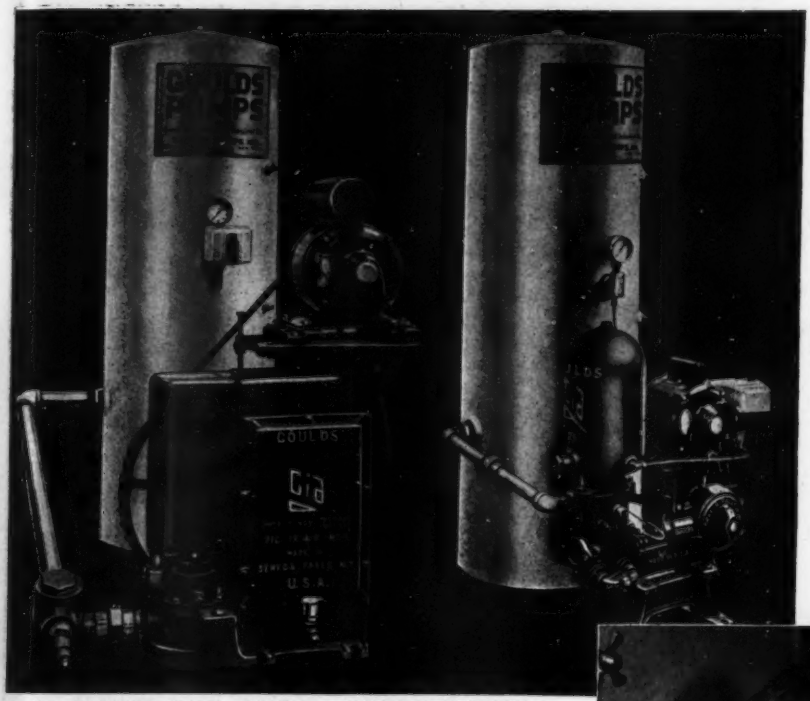

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INSTALL A GOULDS CID WATER SYSTEM

Running water at the turn of a faucet will bring your family the glowing health provided by easy cleanliness.

Install a Goulds CID Water Supply System NOW. No other investment will pay such large returns in added comfort, convenience and profits.

Thousands of farm families are testifying to the efficiency, durability and economy of Goulds CID Water Systems.

Efficient design keeps pumping costs at a minimum. Extra strength of parts carefully made by skilled workmen, and completely automatic starting, stopping and lubrication assure constant trouble-free performance. Available in types and sizes to meet all needs for deep or shallow wells. Send in the coupon NOW for detailed information.

RUNNING WATER

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Please send me the name of the nearest Goulds Distributor. I am interested in a pump for deep well ☐, shallow well service. ☐

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Editor's Chat

800 FEET UNDER GROUND

Carlsbad Caverns extending 900 feet below the hot, dry New Mexico desert provide a gorgeous and entrancing spectacle. The fifty million bats, which inhabit the dark recesses of the cave, and I enjoyed it very much. I enjoyed it for different reasons: the bats because they could hang upside down in the cool darkness to await for night with its foraging expeditions for insects on the wing; and I because I could stay right side up, keep cool and enjoy the constantly unfolding vistas of stalactites and stalagmites, huge Lily Pads of concentric circles of solid onyx, and unbelievably large cathedral-like rooms, all shut off from daylight by 700 feet of rock, but beautifully disclosed by electric illumination.

The lighting system in Carlsbad Caverns merits comment. In what would be utter darkness, I did not see a lamp. Yet the five miles of trails were well lighted, the beauty of the formations greeted you everywhere, and the Big Room, 750 feet by 4,000 feet with a 350 foot ceiling, was a sight to be remembered. The lamps were there, but they were concealed behind a jutting ledge, encircled by small stalagmites or sending a soft glow out from a crevice in the rock. There, 800 feet underground, the National Park Service has an electric illumination system so pleasing yet so simple in principle that it may be applied to our own homes. Lights for seeing—not to be seen.

—I'm proud I am a farmer—

YOU CAN'T STAND STILL

Are you satisfied where you are? Would you like to just stay put with relation to the economic position and farming methods of your neighbors. Are you content to keep on as you are without getting any better or any worse? YOU CAN'T STAND STILL! Have you ever pulled into a station where a train was standing on an adjacent track? You look intently into the windows of the opposite train. It appears to be backing up. If you attempt to stand still you will appear to be backing up in the eyes of your neighbors who are moving ahead. If you try to keep even, you must move forward. You can't stand still!

—I'm proud I am a farmer—

WAGON WHEEL RANCH

Sometimes I wonder whether we should publish an article like the one about the wagon wheel poultry ranch. Not all of us can have Wagon Wheel Ranches; perhaps not one percent. I know this. But occasionally we will print a story like that. Here's why.

It is not always necessary to have a large enterprise to profit by the good practices of large scale production. Good broilers would please your local store, the buyers at your roadside stand, or the diners in your farm tea room. Such modest beginnings often develop into sizable and profitable businesses. I am thinking of Mr. and Mrs. Stalling from South Dakota who canned the family out of a financial slump with sweet corn "in the cans five hours after picking." The corn sold for 30c per quart jar with a satisfaction or replacement guarantee. It returned $95 per acre and such a demand that this year they are building a small cannery on the farm.

When you read one of these stories, just remember the little boy who hung the ostrich egg in front of the nest and said to his favorite bantam hen "Keep your eye on this and do the best you can."

GEO. W. KABLE

August, 1938 **ELECTRICITY ON THE FARM** **Vol. II, No. 8**

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Fig. 6640—Shallow well pressure system with tank and automatic controls. Pump and controls can be purchased separately if you have tank.

New Pump Meets All Needs ON THE FARM

Fairbanks-Morse Ejector pumps deliver 6 to 60 g.p.m. at LOWEST COST

FOR DEEP OR SHALLOW WELLS

IF you want water under high pressure in the house, barn, etc., or if you need water under low pressure for irrigation or other constant flow requirements, see this new Fairbanks-Morse motor-driven Ejector Centrifugal pump at your F-M dealer's.

First cost is low because of simple construction. There is almost no installation expense. Operating cost is likewise low because there are no mechanical moving parts below ground. There are no gears . . . no belts . . . no pulleys . . . no rods . . . no springs . . . no valves that require attention and replacement. The pump requires no lubrication—while motor bearing housings hold sufficient lubricant for six months' to a year's operation.

Lift 15′ to 20′—or up to 120′

Only a small space is required for installation. The shallow well pumps lift from 15 to 20 feet—deep well models up to 120 feet. By throwing a switch and operating a valve, the pressure system can be changed into a manually operated low-pressure system. Pump, motor, automatic controls—everything—guaranteed by Fairbanks-Morse.

Standard equipment consists of pressure switch, pressure gauge, complete set of pipe fittings, and large-capacity galvanized pressure tank. If you don't know your nearest F-M dealer, write Fairbanks, Morse & Co., Dept. 858, 600 South Michigan Avenue, Chicago, Illinois.

FAIRBANKS, MORSE & CO.

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BRANCHES AND SERVICE STATIONS COVERING EVERY STATE IN THE UNION

Mr. Mitchell discusses apples with G. Emerson Markham of the General Electric Radio Station WGY, Schenectady.

New York Farmer Finds He Can Avoid the Storm of Low Harvest-Time Prices by Converting an Old Building Into a Farm Cold Storage Plant at a Cost of Only About $1,000.

By ED. W. MITCHELL

A "Cyclone Cellar"

Ed. Mitchell is an apple farmer at Stuyvesant Falls, N. Y. For about ten years he has been Farm Advisor to radio station WGY and has answered the Mail Bag questions for the Radio Farm Paper of the Air. He is a past president of the New York State Horticultural Society, past Chairman of the State Conference Board of Agricultural Organizations, and an agricultural graduate of Cornell University. He has had wide experience with many crops in many states during his career as a farmer and agricultural consultant.

NEARLY every farmer has three constantly recurring problems to solve. His economic success, or even his survival as a farmer may depend largely upon how he solves them. These problems are: Profitable use of buildings that become obsolete as times and crops change; selling his crops at the right time, when market prices are above the average; some provision to store crops economically during the glut of harvest season.

Most farmers agreed that marketing crops and handling of surplus are more important problems to Agriculture than production. The farmer who waits for the economist and politician to solve this problem for him is apt to find himself with a large crowd of other waiters, in line at the county-house door. Those who wish to stay in the old homestead had better solve it for themselves.

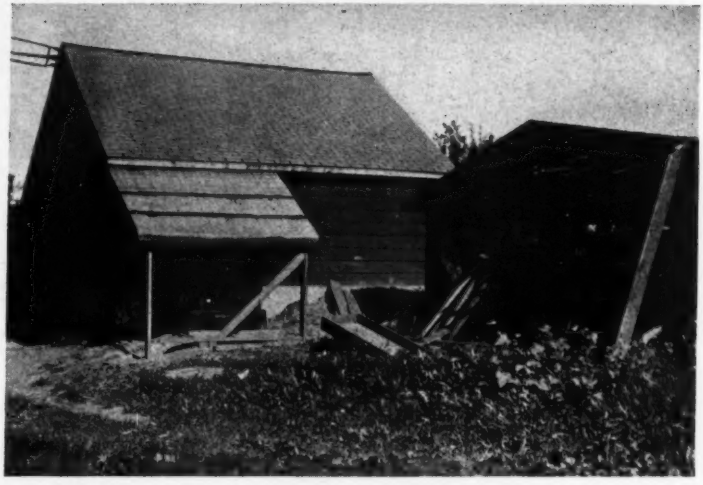
It is the logical thing to expect, and experience shows that the bulk of any one crop, and a great part of the perishable crops ripen at about the same time—in the late summer and fall. Nature has decreed this and there is not much we can do to change it. These perishables all compete for the consumer's dollar and make for price conditions favorable to speculators and dealers who know and can take advantage of the rewards of storage and systematic, orderly marketing. Distant fields look greener, but the lot of the produce dealer or commission-man is not as happy as most farmers think it is. To enter his field is to trespass in the field of trouble and woe, but we can pick around the edge, and nibble off the cream of his crop by finding cheap storage during the time of glutted markets.

Each farmer, of course, has his individual problems to solve, both as to buildings and crops; but in the main there are some basic facts and conditions common to all of us.

Most perishable crops ripen late in the season when the weather is getting cooler every day, and many of the nights are close to the frost line. Harvest time, when all hands are busy, prices likely to be low, and cold weather not yet arrived, is the critical period. It is at this time that a temporary refuge is so important for most crops. A place to duck into and hide till the storm passes over. A place where the farmer can store his crop during the rush of harvest, till he has time and labor to grade and pack it more carefully than the harvest rush permits.

Electricity has made this possible. The tremendous increase in use of electrical refrigeration and ventilation has brought volume production with improved designs and lower prices for refrigerating machinery and fans. Improved insulating and building materials have become available. Best of all, skill and experience in using these things has grown, and become common knowledge as our pressing need for this help has created the demand.

It is not difficult or expensive to insulate a building with six inches of ground cork or a foot of shavings, or with any one of a dozen or more of the modern, improved insulating materials. It is no trick at all to install an electric fan and some

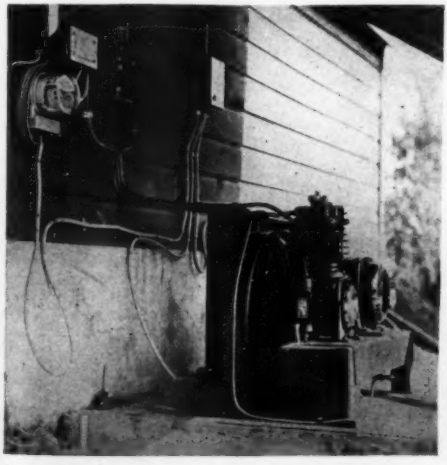


Here's the little cold storage plant. The old ice-house roof was lifted off and put on posts at the right to make a shelter shed. A better roof was put on and the building insulated with eight inches of ground cork. It now provides storage for 1,500 bushels of apples.

for Perishable Crops

air ducts to take advantage of the cool night air to cool off your storage. Better still, it is no longer an expensive or complicated job of engineering to install a small, automatic, electric, air-cooled compressor and an expansion coil and fan to bring a little refrigeration to the place where it is most needed. The boys brought one to my place after dinner one day, and had it operating by suppertime. Supper was only delayed thirty minutes.

This is the compact little automatic refrigeration plant that did the cooling. It is powered with a 1½ HP. motor. Placing it outside kept heat out of the building. It was housed-in later, louvre fashion, to protect it from the weather.



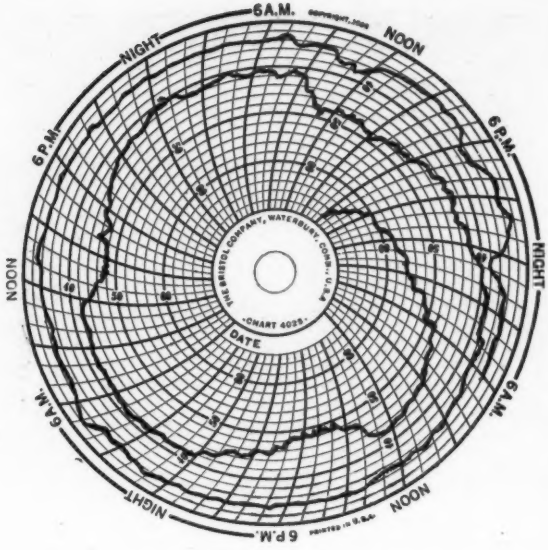
We had put a new top on the old ice house that had become obsolete, and had insulated it pretty well with cork and shavings. Our practice had been to store late fruit there and cool it with fans bringing the cold night air, and sell the McIntosh and early varieties at harvest time, or put them in a commercial storage. This year things are different (they usually are), and we hit a badly glutted market with no buyers, and little hope for the future. We had to have a "cyclone cellar" to escape disaster, and that old ice house saved the day.

We started storing the McIntosh there, and put in a hurry call for refrigeration. They brought down and set up a little one and a half horse power, air-cooled unit, and had it operating in half a day. They set the thermostat at 34, started the wheels turning, and no one had to touch it till we pulled the main switch the first of March.

The Refrigerator Performs

The charts from the clock thermometer tell part of the story. Starting with the house half full of hot apples at 68 degrees F., we pulled it down 20 degrees the first night, to 48, held it between 40 and 50 for the rest of the week while we piled in hot apples to the roof, and then in the next week pulled it down steadily to 38, 36 and finally 34, and held it there the rest of the season.

We overloaded the little machine shamefully, and it had to plug away constantly for the first three weeks to pump out all of that stored heat. I looked at the wheels buzzing around on the meter, and watched the apple market go down about as stead-



This temperature record chart shows the cooling down of the Mitchell storage house after starting the refrigeration machine. With a house full of "hot" apples the temperature dropped from 68° to 34° in a little less than four days, —and there it stayed.

ily as the temperature. I wondered if that motor was going to run constantly all season, and whether apple prices would ever warrant the cost. I got my answer.

The first five days it used 150 kilowatt-hours. just 30 a day. I felt relieved. At the end of the season, March first, we had used a total of 2910 KWH, or a surprisingly small amount of electricity to store something over 1,500 bushels of apples (because we reloaded every time we took some apples out), and a cost of less than three cents a bushel for power. I was more than satisfied with that answer; but that is still only part of the story.

The machinery cost $825, completely installed, we spent about $150 insulating the building and say $50 for operation, a total of about a thousand dollars. We saved about three or four hundred dollars compared to what commercial storage would have cost. But above all, we were able to house the crop as fast as it was picked, and then sort, pack, and sell as time and opportunity permitted, and put in later varieties from the common storage as fast as space was made available.

Life is too short, and on my farm too hectic, for me to try and figure all the little items of depreciation, obsolescence, interest and labor for every operation. I know when a life-saver comes along, and am thankful. If an investment will pay for itself in two or three years and give me some benefits in addition, it is the sort I want, and this farm cold storage seems to be just that kind. It is a refuge for my crop in a time of need and a comfort to me in that time of trouble and flooded markets which we meet every year.

EDITOR'S NOTE.—The folks up around Stuyvesant Falls told me that buyers went to Ed Mitchell's little cold storage plant, saw his crop in excellent condition and in storage close to the point of picking, and he didn't have to worry any about a market.

—I'm proud I am a farmer—

Using a Water System for Cooling the Home

By W. EUGENE WHITE

WHEN temperatures get up around the unbearable 100 to 110 degree point, you would give a lot for a cool room to step into for a little relief or a refreshing place to sleep. If you have cold water in your well you can do this without "giving" very much, according to Mr. Hall.

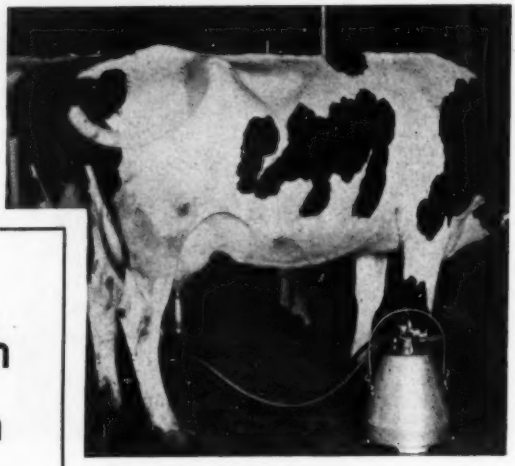
Mr. White is assistant agricultural engineer at the University of Nebraska, Lincoln, Nebraska.

Last summer Mr. H. J. Hall, a business man of Lincoln, Nebraska, decided he had suffered enough with the heat. Temperatures the summer before had been up around 105 to 110 degrees for a number of days at a time.

Lincoln, Nebraska, is blessed with a cool water supply, even in summer time. Mr. Hall took advantage of this fact and rigged up a homemade cooling system, at a cost of approximately $5.00, exclusive of a 12 inch fan which he already owned. His cooling system consisted of a large radiator from an old automobile which he picked up at a junk yard. This radiator was set up inside a window in his living room. Through the window he brought a piece of garden hose from an outside hose connection and attached it to the lower hose connection at the radiator. A piece of garden hose was attached to the upper hose connection of the radiator and carried back out the window to a lawn sprinkler. When the water was turned on it sprinkled the lawn, but in doing so, it first passed through the big radiator through which air was blown into the room. In passing through the radiator the air was cooled and the room held at a temperature of about 78 degrees. In order to help in the cooling process the shades were drawn and as much outside heat excluded as possible.

(*More on page* 23)

Plenty of hard work for four men to milk forty cows twice a day.



When Times Got Tough George Hudson Bought a Milker

By R. R. PARKS

Milking Machines When Properly Used Save Labor, Make Money and Reduce Drudgery for Many Farmers

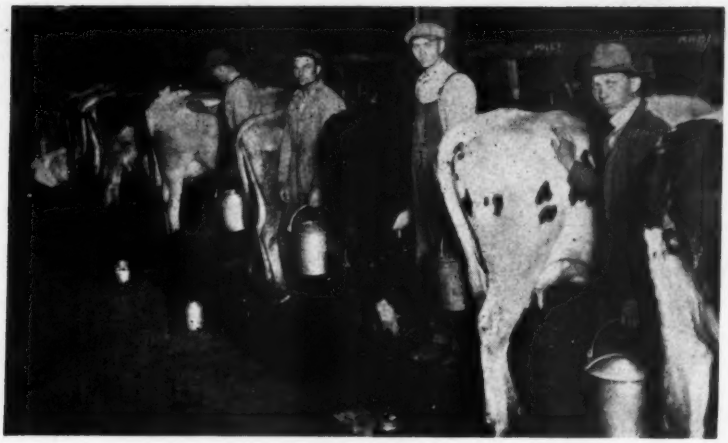
HAVE you ever seen a man and wife bent with age and patched with meager savings still clinging to the laborious ways of doing everything themselves just because they wouldn't take a chance in this "machine age?" Human energy, when matched—with a milking machine for instance, gets the raw end of the deal every time. The dairy farmer must constantly consider these questions. "What is an hour's labor worth?" "How do I value my time?" "Can I use my time more profitably?", because he, more than any other farmer, *has* a 24-hour day job. He is always busy mentally or physically, and he learns thru experience that smart management accounts for more of his income than hard work.

Mr. Parks Is Extension Agricultural Engineer, University of Illinois, Urbana, Illinois.

I have before me a summary of farm accounts from a typical dairy county in Illinois. The investments in machinery and equipment compared with the labor and management wage are tabulated on the following page.

Of course there are other items to be considered in these records but it is significant that the farmers who made the largest incomes were the ones who had supplemented their efforts with the most eqiupment. A milking machine can be a money maker with the right farmer.

A milking parlor for four cows occupies the far end of this building. The near end is partitioned to handle milk in one room and for washing equipment in the other.



Four such units replaced four men and allowed two operators to do a cleaner, easier job.

Curious is the case of George Hudson, a young farmer who lived near Columbia, Missouri, several years ago. It required four men two hours to milk the 40 cows and weigh the milk (10.95 man-minutes per cow milking to be exact). Labor cost at 20 cents an hour was $48 a month, providing two hours only were charged to the milking by these four men. Times "got hard" so George decided to buy a milking machine, help with the milking himself, and let three men go. He did and found that he still could do the milking in two hours with the help of one man (6.12 man-minutes per cow milking by machine), and allowing himself 20 cents an hour for labor, he had approximately $20 a month to pay on his milking machine.

The cost of operation was $3.66 for 122 kilowatt hours average each month. If these were the only savings, George considered the machine would certainly be worth while, but there were others which he had not counted on previously. The dependability of the machine in comparison with hired labor was quite an item. Another thing which George liked about the new system was that in a pinch one man could do the entire milking job with three single units. This happened only during rush seasons, of course, when one of the two was busy with the tractor in the fields.

Take another interesting case where a machine made dairy farming more of a pleasure than hard work. Robert Brown, just across the Mississippi River from Illinois at Ethlyn, Missouri, for a number of years milked 15 cows by hand while his older boys, just in their teens, helped as best they could. Mr. Brown saw the folly of all this hard work and bought a two-unit milking machine. Where it had been a family job before, now it is a relatively easy task for one man to milk the 15 cows in less than an hour's time and with considerably less effort than before. The cost of running this machine is $1.50 a month with electricity at three cents a kilowatt hour.

The average time to milk a cow by hand, taken from six different farms, was 8.37 man-minutes per cow giving 10.45 pounds of milk. It required only 4.61 man-minutes per cow giving 12.14 pounds of milk when milked by machine. This would indicate rather conclusively that one man can operate a double unit machine and do a better, easier, and quicker job than two men can do by hand.

In general, an operator can use a milking machine on ten cows, finish his work, and wash up the machine before two men could do the job with ordinary hand milking. In order to do this and keep the machine sanitary, washing equipment and hot water must be readily available. In the case of rubber parts, they should be immediately rinsed in cool water and then in hot water before being submerged in a sterilizing bath. This requires planning and equipment.

Another item which should be looked after when machine milking comes along is proper care of the cow's udder; all long hairs should be clipped off and the udder carefully wiped before the machine is put on the cow. In cases where the cow is being broken to the machine the udder must be massaged at times during the milking. This operation tends to relax the muscles and reduce the amount of strippings after the machine has been taken off. There is usually not more than a pint to be taken, but it is a task which the milker must look after. Some cows are naturally "better milkers" than others and give their milk to a machine fast and completely. Any cow when properly handled can be milked by a machine and in the long run will respond better to this mechanical effort than to frequent changes of hand milkers.

There has been some argument over the past years as to whether or not a milking machine is bad for spreading udder diseases in a herd. The usual experience is that the operator can be as careful or as careless as he likes. If he is careless regardless of whether it is hand or machine milk-

(*More on page 26*)

Equipment Investment Compared With Labor and Management Wage

	Machinery and Equipment	Percentages	Labor and Management Wage
Average of 18 most profitable farms	$1,410	107	$2,025
Average of all the farms	1,314	100	1,058
Average of 18 least profitable farms	1,282	91	—8

INCREASING AN INADEQUATE FARM WATER SUPPLY

What to Do with Ailing Springs, Wells and Cisterns

By FORREST B. WRIGHT

MORE water is used when it is available under pressure from an automatic water system than when it must be pumped or carried. Because of this it sometimes happens that a well or other source of supply, which was quite adequate with a hand pump is inadequate when an automatic water system is installed.

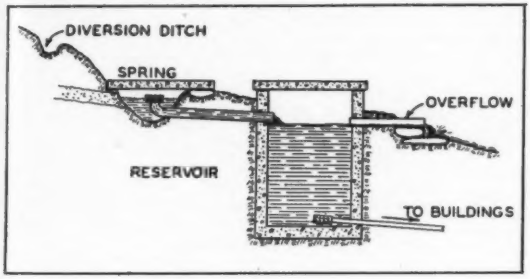
Dr. Wright is Assistant Professor of Agricultural Engineering, New York State College of Agriculture, Cornell University, Ithaca, and author of the book, "Electricity in the Home and on the Farm."

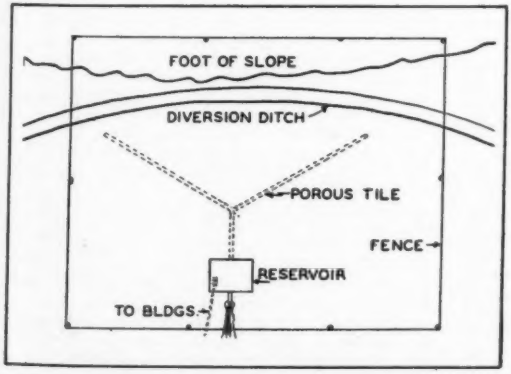
If the flow of a spring is weak in dry weather, it is probably caused by a lowering of the ground water level or a depletion of the flow through the subsoil. Under this condition, the effective supply may be increased by providing a storage reservoir located far enough below the spring to allow a free flow of water from it as shown in Fig. 1. The water should not be dammed up at the spring as any raising of the water level will decrease the flow.

With the reservoir below the spring as shown the best possible flow may be had from the spring and even though this be little more than a trickle, if it is all collected in the storage tank, the amount of water which will accumulate in 24 hours may be surprising.

Do not attempt to increase the flow of a spring by use of dynamite. This practice frequently results in a complete loss of the spring.

In case the spring is located in a marshy area at





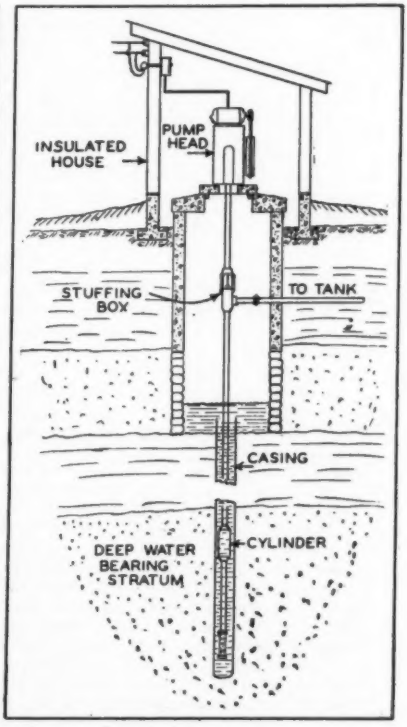


Fig. 1. Showing a method of collecting and storing water from a weak spring. Note the ditch above the spring for diverting surface water which might contaminate it. **Fig. 2.** (lower left) A method of collecting water from a spring in a marshy area. The fence keeps out stock and the diversion ditch carries away surface water. **Fig. 3.** (Right) Illustration of how the capacity of a dug well may be increased by drilling deeper into water bearing strata; greater penetration into strata means more rapid flow to pump.

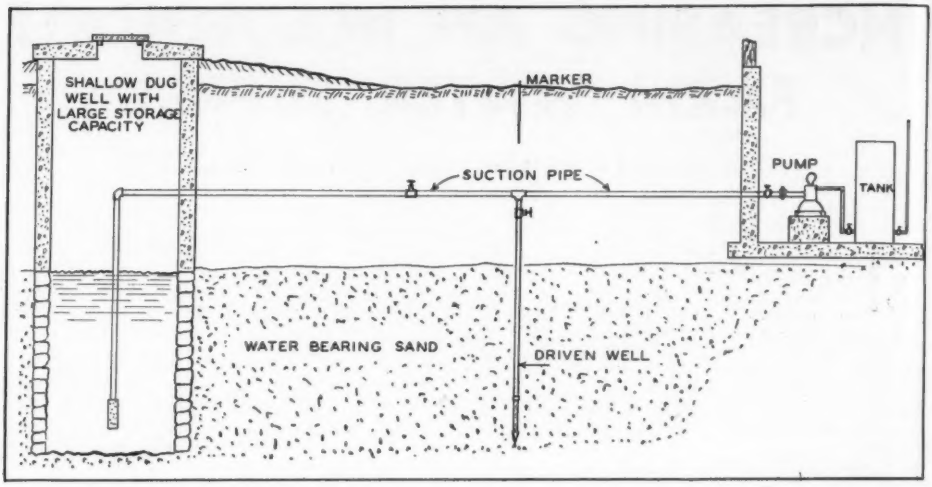


Fig. 4. This shows how a dug well and a driven well may be used to supplement each other. Water may be pumped from either well, or from both simultaneously where depth of water and rate of flow is the same in both wells. Such an arrangement increases the available supply.

the base of a slope, the flow may be increased by installing drain tile through the marsh at the base of the slope as shown in Fig. 2. This drain tile will collect the water where it seeps out at the base of the slope and lead it to the storage reservoir. The tile should be laid in gravel at a depth of about 4 feet and covered with clay. The entire area so drained should be fenced off to exclude animals and a diversion ditch constructed at the base of the slope as shown to divert surface water. Water from such springs should be tested by a health officer as there is some likelihood of contamination.

A storage reservoir at a spring for household supply should be about 4x4x6 feet, or have roughly a storage capacity of 100 cubic feet. Such a reservoir should be well protected from pollution by surface water.

If there is plenty of water at the spring and adequate storage, but not enough water or pressure at the end of the pipe line, the pipe may be too small. This situation can be remedied (1) by installing a larger pipe; (2) by building a reservoir near the buildings or in the basement, into which the spring is allowed to flow continuously. The water can then be pumped from the reservoir to the house service by means of a shallow well pumping system.

Where the distance from the spring to the buildings is not great (three or four hundred feet) the least expensive method would be to install larger pipe. If the spring is a considerable distance away, it would probably be cheapest to build the reservoir at the buildings and install a shallow well pump, using the existing pipe line to carry the water to the reservoir continuously.

Dug Wells

When a dug well becomes inadequate, the supply may be increased (1) by enlarging the diameter of the well or digging it deeper, to increase the storage capacity; or (2) drilling deeper through the bottom of the well as indicated in Fig. 3. This may be desirable where the dug well is not adequately cased or where rock occurs at the bottom.

A third method of increasing the supply, where the water in the dug well is in a porous stratum within 20 feet of the ground surface, is to use driven well points as illustrated in Fig. 4.

If experiences of others in the neighborhood have shown that drilling deeper is likely to get salt, gypsum or sulphur water, the best plan would be to dig or drive another shallow well or build a cistern as a supplemental supply.

Driven Wells

With driven wells, the most likely method of increasing the supply is to drive one or more additional well points 25 to 50 feet apart and preferably to the same depth as the old well. Where driven wells are used, the water is usually in a bed of water-bearing sand or gravel, and flows into the driven pipe through a strainer at the bottom. The addition of more pipes in the water-bearing stratum taps this water reservoir at more points, thus increasing the total rate of flow.

The driven well may be also supplemented by a dug well which would provide storage capacity as shown in Fig. 4.

Where water in the new well or cistern is about on a level with that in the old well, one pump may be used to pump from both sources, as shown in the illustration. Unless the water in both wells is exactly at the same level and both supply water at the same rate, valves should be placed on the suction lines, so that the flow from each source can be regulated. Such valves should be of the gate type and should have good packing around the stems to prevent air leaks. Should there be considerable difference in level between the two sources, the pumping may have to be done alternately from one well and then the other, or an extra pump may need to be installed.

Drilled wells which fail to respond to increasing

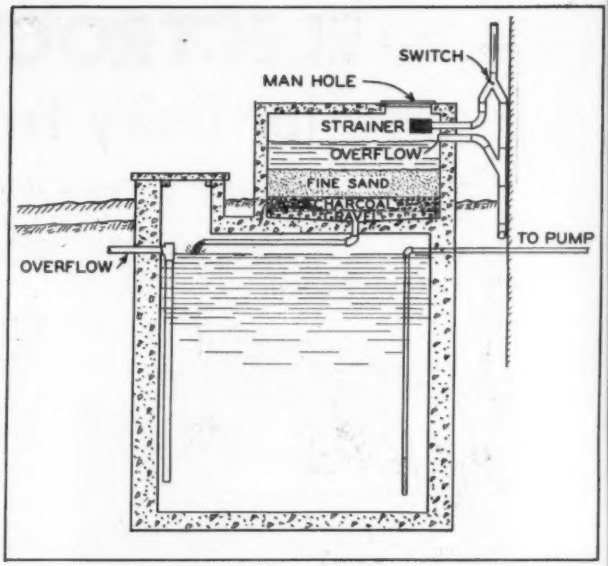


Fig. 6. A good type of cistern. It is built tight so there is no opportunity for surface water or dirt to get in. This plan is proposed by C. A. Holmquist, Director of the New York State Division of Sanitation at Albany, N. Y. The filter shown may be constructed as part of the cistern or as a separate unit.

demands may sometimes be improved by drilling deeper. A good well driller should be consulted before this is attempted. It is also advisable to consult the neighbors who have wells to see at what depths they have obtained water. In some localities it is necessary to go to extreme depths to get an abundant flow of water.

If the well is an old one the flow may have been greatly decreased by sediment in the bottom as shown in Fig. 5. The sediment can be bailed out by means of a well driller's bail. If the sediment is very fine clay, it may require some time for the flow to increase after bailing because of the clay in the pores of the rock. Do not attempt to increase the flow by blasting with dynamite.

With weak wells, the supply can sometimes be utilized more effectively with a small capacity pump and a large storage tank. With this arrangement the well may be able to supply the small pump over a long period of time while the large storage tank is being filled. The large storage tank together with the output of the pump may satisfactorily carry over the peak demand periods.

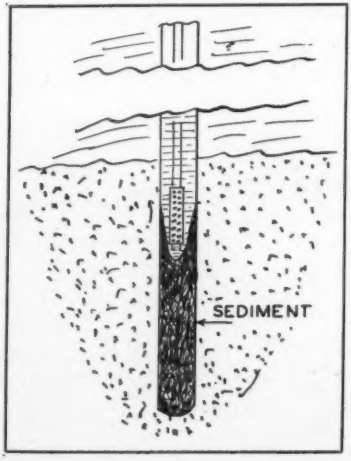


Fig. 5. Sediment in the bottom of a drilled well may decrease the flow of water from the water bearing stratum. It may be removed with a sand bucket or driller's bail.

In case of failure of the above methods, the most practical solution is to supplement the deep well with some other source. A common method in regions of plentiful rainfall is to provide a large cistern at the house or barn or both, where the larger roofs will catch enough water to keep the cisterns supplied.

As cistern water is soft water and desirable for washing purposes, the cistern usually supplies water for the hot water side of the plumbing system or possibly for all household purposes except for drinking.

Where a cistern or shallow well is used as a supplement for a deep well, two pumps will be required as a deep well pump will not pump from two sources and shallow well equipment will not pump from a deep well.

Cisterns

Where satisfactory ground water is not easily available and cisterns provide the most practical source of supply, increasing the supply calls for enlarging the existing cistern or building additional ones. It is better, where possible, to build an additional cistern at another building to take advantage of additional roof area for collecting rain water.

Where cistern water is used for all purposes, the underground cistern is best because the water can be kept at moderate temperatures the year around. Fig. 6 illustrates such a cistern. For best results roof water should not be turned into the cistern until after the roof has been washed off. The cold spring and fall rains provide the best water. A charcoal filter on the down spouts will help clarify the water. The cistern should be well sealed at the top as shown to prevent the entrance of surface water.

Where cisterns must be depended upon for the entire water supply and there are periods of drought, the cistern should be a storage reservoir of ample size to carry through the dry spells.

ELECTROCUTION for Dairy Farm Flies

By G. H. DACY

The chute through which the cows pass is blocked by curtains of rubber and rope which brush the flies from the bovine shoulders, bodies and flanks.

DOWN in southern Florida where the tropics begin, flytime is not seasonal but a year-around source of annoyance, particularly on dairy farms. Sanitation, sprays, and fly swatters fail to control the winged pests; electric fly traps, however, have proved remarkably successful in the abatement of the fly evil. Thomas and Reasoner, successful Dade County dairymen, who milk as many as 300 grade Guernseys and Jerseys, report that the latest fly-electrocution devices are highly efficient, much superior to the pioneer types of fly catchers which were objectionable because they shorted out too easily. This is the eighth year that these milk producers have yoked electricity for fly-killing. Despite that molasses is a constituent both of the dairy feed and beet pulp which they use—molasses is a favorite delicacy among the fly species—their milking stables and pastures are outstandingly free of horn flies and similar pests.

One of the fly traps is located in the spacious feed room which accommodates several carloads of dairy feed. The flies which penetrate to that storehouse are attracted to the insect-killer by an electric bulb which is illuminated during the feeding and milking periods. The pesky flies settle on the wires of the trap, lured there by the light or are electrocuted by venturing too close. The odor of frying flies attracts more of the trespassers which meet similar fate. Dead flies on occasion have been removed by the quart from the vicinity of this efficient and economical fly trap.

Outside the milking stable two other electric fly traps are mounted at strategic points where flies tend to congregate. Each cow in entering and leaving the stable passes through separate closed chutes which are rigged up as fly destroyers. Passage through either of these chutes is blocked by a barrier composed of two rubberized curtains; strands of heavy rope are attached to the curtains. Each set of curtains has a central head hole something like the opening in a steel stanchion; this opening is the same distance above the floor of the chute as the normal position of the cow's head. She sees daylight through the hole, pokes her head into it and thus forces the curtain apart; the rubber and rope brush the flies from her head, body and legs as she passes through the entrance or exit to the stable. An electric lamp at the top of the chute lures the insects brushed from the cow to the electrified grid whose surface is about the same size as your daily newspaper. Flies that venture too close to the electric trap or which even settle on the grid are killed immediately; the active irritators of dairy cows, especially the objectionable horn flies, are disposed of readily in this effective manner.

These Florida dairymen also have installed runways and similar chutes at key points throughout their pastures which aggregate 700 acres. You would be surprised to see the wholesale execution of flies which is effectuated by this practical plan of fly control. The dairymen also carry the campaign back to the source of origin of many of the flies such as manure accumulations and other refuse. This debris and fertilizer are cleaned up regularly and thoroughly in order to reduce and control the breeding grounds of the flies.

The light lures the flies to top of chute where the electric grid is mounted—the fly electrocuted. (Boy is pointing at grid mounted horizontally in roof of chute.)

2¼ POUND BROILERS in Nine Weeks

From Egg to Fried Chicken— All the Way with Electricity

By M. S. SHOOP

ELECTRICITY forms the background for the operation of the Wagon Wheel Poultry Ranch, Redondo Beach, Calif., one of the largest plants of its kind on the Pacific Coast. This self contained ranch carries on its own operations from the production of its own eggs to the sale of packed meat birds to Los Angeles hotels and restaurants, and throughout the whole process various uses of electricity are made which contribute to efficiency and profit.

Bert J. Griffith is proprietor of this large enterprise. Frank Tuttle is foreman. The unity of its operation is illustrated by the fact that it has its own herd of cows to produce milk for the birds

Wagon Wheel birds are a cross between Cornish and Rhode Island Reds. The eggs produced by carefully selected breeding stock are incubated in electric incubators. Chicks are started in battery brooders where electric heat aids in their hardy development. The ranch uses eighteen of these starting batteries, each with five decks and a capacity of 500 birds. Total capacity is 9,000.

The efficiency of Wagon Wheel electric brooding methods is shown by the low mortality figure of only three percent.

After about three weeks in electrically heated starting batteries, the birds are removed to sixteen growing batteries, whose combined capacity is 6,400. There the birds are fattened and kept until ready for killing. The Wagon Wheel Ranch is producing a two and a quarter pound first-class bird in nine weeks—an example of super-speed and efficiency.

After birds have been killed and picked, they are placed in a vat of electrically cooled water, where a short soaking gives them plumpness. They then are graded in a room which is kept at about 40 degrees by electric refrigerating equipment. Birds are packed and held until delivery in a super-cold room, 20 x 20 feet in size, which is insulated with one and a half feet of insulating material. Temperature in this room is kept at about 24 degrees. A refrigerated truck delivers the birds to the kitchens of large eating establishments.

Completion of the expansion program now under way at the ranch will double its present capacity.

Under the same management is the Wagon Wheel Cafe in the beach city's amusement center, which is well known for delicious chicken dinners serving meat raised on the ranch.

Five-deck electrically heated battery brooders are employed to give the chicks a good start.

Electric refrigerating equipment keeps the temperature of the grading room at 40 degrees.

Tualatin Valley Boys Have Prize Winning 4-H Electric Clubs

By BEN W. FABER

"ED, can you come over and connect up a motor for me?" Ed is a young farmer boy who is now in the second year of a 4-H Electric Club course. The man asking the question was Fred Thurnheer, a successful farmer living in the fertile Tualatin Valley just west of Portland, Oregon. And Mr. Thurnheer needed help badly because, due to heavy rains, his basement was filling with water and he needed the motor connected so he could pump the water out.

Mr. Faber is in the Farm Service Dept. of the Portland General Electric Co., Hillsboro, Ore., and is leader of the two 4-H Clubs.

Ed Setniker, being a good neighbor, was anxious to help out, but he hesitated feeling he knew so little about electricity. Then he remembered what his Electric Club instructor had told him, namely:

"Don't be afraid of electric motors. Just keep calm and use your head. An electric motor is more simple than a gas engine." So Ed went with Fred Thurnheer.

The first thing he noticed was that there were four wires coming out of the motor, and there were only two wires to connect to. Then Ed remembered something else from his 4-H Electric course—"Many motors have a wiring diagram right on the motor. Just follow it."

And sure enough, there it was.

The basement was pumped dry.

The first 4-H Electric Club in the State of Oregon was started in 1936 near Hillsboro, Oregon. There were 8 boys enrolled. The Club met twice a month. Practical electricity was taken up. Actual wiring was done and two field trips were made to outstanding electrified farms.

The outstanding achievement of this Club in its first year was a display put on at the Washington County Fair. Miniature farm buildings were built up to scale, and placed on a 4' x 6' piece of plywood. Imitation wires were strung between buildings and marked as to size. Small lights actually burned in the buildings. The equipment in use in the buildings was listed. A small sewing machine motor connected to an old auto oil pump actually pumped a stream of water.

Many people stopped to study the display. Many realized their own wiring was not adequate. An attendant at the display helped by answering questions.

In the spring of 1937, a second 4-H Electric Club was organized. This is known as the Hazeldale 4-H Electric Club. John Santoro was elected president; Eugene Barnett, Vice-President; Charles Shaper, Secretary. Other members of the club were Joe Berger, Wilfert Barnett, Ed Setniker, Earl Bolliger and Clarence Renno.

The same general procedure was followed in the Hazeldale group as has been outlined for the Chehalem Mountain group. The outstanding achievement of the Hazeldale Electric Club came when the group selected two of its members, Ed Setniker and John Santoro to act as an agricultural demonstration team at the county fair.

The Magnetic Switch Demonstrated

The boys chose for their demonstration the construction and operation of a magnetic switch for motor protection. The motor could be overloaded by means of a brake, and when overloaded for a certain length of time the magnetic switch would cut the motor off the line. The boys definitely showed how a motor would burn up upon continued overload if only fuses were used for protection of the motor.

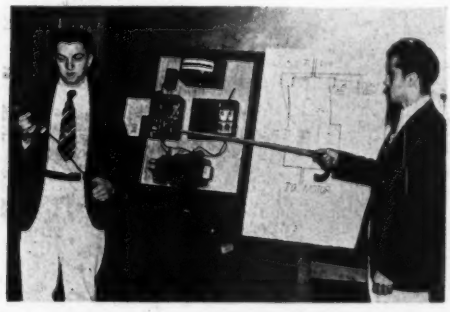
Ed and John gave such an excellent demonstration at the county fair that they were sent to the Oregon State Fair. There they competed with the winning teams from twelve other Oregon counties. The two boys from the Hazeldale Electric Club put on such a good demonstration and were so successful in explaining how a magnetic switch worked that they became state champions.

Later on, the two boys competed with the winners of four other northwest states and came in second, which again was a good record.

These Electric 4-H Clubs were started for the older club boys. The object has been to teach them greater familiarity with electricity. That this has been a successful program is indicated not only by the experience related about Ed Setniker connecting up a motor, but also by the fact that county winners in a National rural electrification contest have come from the electric clubs. Also the boys do some of their own wiring and do an excellent job.

And the boys are living up to that wonderful 4-H pledge.

"My head to clearer thinking,
My heart to greater loyalty,
My hands to larger service,
And my health to better living,
For my Club, my Community and my Country."



Ed Setniker (left) and John Santoro giving a demonstration of motor control. It won them county and state 4-H Club championships.

Electrical HOUSEKEEPING

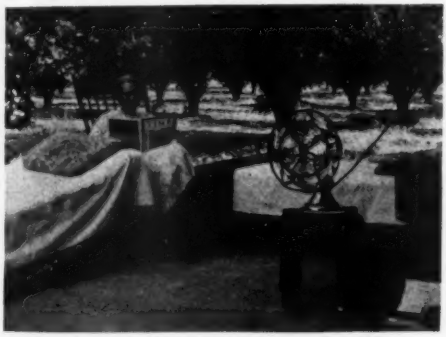
Conducted by GAIL MEREDITH

When You Turn on a Wind

MRS. PETTINGILL lives in Orosi, California. I have never seen her so I can't tell you whether she is tall or short, dark or fair. I don't know whether she helps her husband raise oranges, walnuts, or chickens. It may even be avocado pears or wheat. It's funny not to know, isn't it?

But whatever she does for a living, she believes in making life comfortable, too. I thought about her this month because of her electric fan.

It is just an ordinary fan, I suppose. If it is new, it is quiet and smooth and very, very efficient.



Mrs. Pettingill in her park living room. The electric fan which adds an extra measure of coolness is shown on the movable stool.

If it has been doing duty for year after year, it may be a model that makes quite a lot of noise at its job of stirring up gales at the turn of a switch. She didn't mention that, and I don't suppose it matters. The thing that is interesting about that fan,—but I'm going to let her tell you about it herself.

"My husband is never too busy to fix up anything I want him to," she wrote, "so one day, I asked him to put the electric fan on wheels and he did. He built a square stool, one foot on each side, and 15" high, using some lumber we had on hand. The legs are made of 2" square wood; three small cleats on the top of the stool swing around on their screw fastenings so that they cleat down the base of the fan when it is set on the stool. But here's the best part. He put ball bearing casters on the legs, and all I have to do is to pull the whole thing anywhere I want it.

"This same fan is called upon to do double duty in the summer: we have a large umbrella tree near the house and every summer we spread under this tree a large rug—long since denied admission to the living room—and with half a dozen chairs of uncertain age, a feeble table and a defunct sanitary couch (well padded) we dub the whole conglomeration "Pettengill's Procrastinating Park." Well, on extra hot days, we add the electric fan to the circle, turn it on. Then it oscillates from one loafer to the next, and back again, cooling every brow and, incidentally shooing away any stray fly that might have come over from some neighboring state.

"This electric outlet, which has been hung in the tree, carries a double socket; so we may read in the evening, if we so desire, and the fan continues oscillating the bugs away from the family circle. The cord is merely an extension brought through a small hole in the screen porch, and left on duty all summer.

"Business callers and social callers, hurried or deliberate, they are all ushered into the park and decisions of great importance or of none are made in cool headed comfort."

Isn't that a good idea? I hope that lots of husbands with hammer and saw will be helping their fans to get around this summer.

You could roll that fan up near the clothes rack on rainy days to hasten drying. You could set it down to whip a last minute washing dry or to finish off a pair of white shoes whose owners are waiting in an agony of impatience. You could pull it into the kitchen, unless you already have a fan mounted behind the upper sash of one of your kitchen windows.

In that case of course you have only to pull a cord to blow the heat, steam and cooking smells out doors, and to draw fresh air into the kitchen through windows and doors open in another part of the house, the shady side for coolness.

I talked this spring with an engineer who has spent years and years working with these household fans, helping to make them better and quieter every year.

"I've often noticed," he said to me, "that some folks seem to think that the more noise a fan makes, the cooler they are getting. Of course that is not true. If you have an old fan, I suggest that you use the second or third speed if you want to get the best results. That will give you quieter, slower motion, and with the breeze creating a general stir of air in the room, you'll be better off than if you have it blowing a regular gale right at you, ruffling your hair and rustling papers and magazines noisily.

"It isn't the direct blast that cools you," he went on, "but a constant circulation that hastens the evaporation of body moisture and makes you feel cooler regardless of what the thermometer says."

We used to think that a fan should sit on a table at our elbows, or hang on a peg on the wall. This engineer goes so far as to say that it is often good practice to put the fan on the floor when this can be done easily, so it will have a chance to stir up the cooler air there.

During hot nights, he suggests, put the fan in or near an open window, with the window across the room open, too, so that the fan can

keep up a constant circulation that scoops the stale air out of the room.

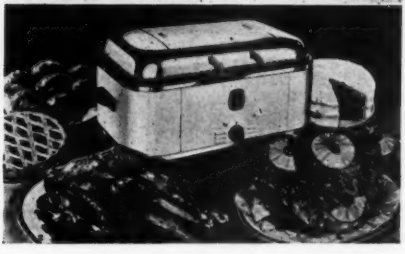
The new pedestal fans are as portable as a floor lamp, but any fan can run about from place to place if your husband is as smart as Mr. Pettengill and puts it on wheels.

• • •

HOT DINNERS
By Cool Cooks

IF you've been wishing you could try cooking with electricity, but aren't quite ready this year to buy a range, the electric roaster offers a good way to start.

I'm sure you know what a roaster looks like. It's a little oven, oval or rectangular, the largest some two feet long and just over a foot wide, and a foot high. It has an inch of good insulation in the walls and two inches in the bottom. A roaster may use 660 watts or 1,200, according to its size. But it can be plugged into a convenience outlet.



If the kitchen is crowded with jars and covers, with rubber rings and pails of tomatoes, the porch would be a good place to get dinner. And I wouldn't have you think it needs to be a skimpy one, either,

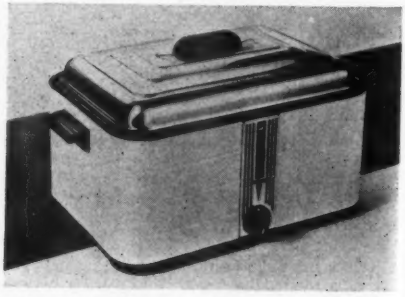
You can cook a 15-pound turkey in one of these roasters. But I don't suppose you want to, not on a hot August day, with tomatoes to can, too. But you can have a roast and vegetables easy enough. You could bake a pie or cake before you put the dinner in, if you wanted to.

It's just as easy as this. If you have a ten-pound ham to bake, you can set the thermostat at 300 and put the ham in about eight o'clock. At ten you add a pan of scalloped potatoes. At eleven you take the ham out, drain off the drippings and skin it. Then mix some of the drippings with half a cup of brown sugar and a teaspoon of prepared mustard, and rub this over the ham. Stick a handful of cloves on the ham hit or miss and put it back to bake for another hour. Now is the time to put in a pan of carrots, scraped and cut up, and covered with half a cup of hot water. Well, not covered, probably, but with enough for steam.

They'll all be done when the men come in for dinner.

Perhaps you're wondering whether the roasters bake, too. I myself have baked angel food, bread, pie, rolls, cookies and biscuits in mine. I've roasted and braised meat. I've used it for the long slow cooking of beans and stews and soup. And we all like the results.

I wouldn't choose to bake cookies, not a big batch of cookies in the roaster if I had an oven handy. But except that you can't do as much at once, you can do just about anything in the roaster that you can do in the oven of an electric range.



The thermostat on the roaster controls the heat for you. You can set it so low that it will keep food warm indefinitely or so high that you can get a 500 degree oven for pastry shells.

Because it is well insulated, it does not waste heat in the kitchen. That's a decided advantage this time of year. It is convenient to be able to use it wherever you like. You can fix a hot dish for club day and take the roaster right along with you, plugging it in when you get to the hall, or wrapping it well to conserve the heat.

The roaster is easy to take care of. The cooking pans and the cooking well, you can wash in the

(*More on page* 20)

IF A WOMAN PLANNED THE KITCHEN

(Winning Letter for May Contest)

Mrs. Pigott takes us right into her kitchen and shows us how she planned it to make her work easier and pleasanter.

* * *

"The main cupboard is 9 ft. long with the sink in the center. The base is 2 ft. deep and 34 inches high. Below the sink there is space behind metal cane doors for dish pan, drainer, soap and scouring powder. The space on either side of the sink has a column of drawers next to sink and shelves (below one drawer) on the ends. I keep hand towels in the drawer at the left; pie, cake, and bread tins and roaster on the shelves. In the next column I put recipe books in the top drawer. There are three drawers below this which are enclosed by a metal cane door. The front side of these drawers is made lower than the sides to aid in air circulation. In the top one I keep about 1 dozen eggs, oranges, lemons, and a few apples. This drawer holds approximately 1 peck. The 2 lower drawers each hold one-half bushel. In one I keep onions, sweet potatoes and such other vegetables as do not require refrigeration. In the lower drawer are the potatoes. This is proving to be a most convenient part of the kitchen.

"Now to the right of the sink in the top drawer, I have my silver wear (partitioned), and in the very front my paring and butcher knives. Below this I have my dish towels and in the lower drawer, bread.

"At the extreme right are such things as potato masher, cookie cutters, rolling pin, egg beater, etc., in the drawer. On the shelves below are my pressure cooker, kettles and the toaster. This base is covered with tempered press wood—a very satisfactory working surface.

"Between the working surface and the top drawers there is a sliding 'rolling' and 'cutting' board on each side of the sink. There is 'toe room' at the bottom, a space about 4 inches high and 4 inches deep.

"The upper part of the cabinet extends from 16 inches above the base to the ceiling—8 ft. 3 in., and is 12 in. deep. The two sections (one on either side of the window over the sink) are the same size—3 ft. 4 in. in length. There is a short pair of doors covering the top shelf on each cupboard, and in all this space I keep seldom used dishes and vases.

"In the left hand cupboard are the baking spices on a wire rack attached to the left door. On the shelves my regular supplies, measuring cups, cookie jar, paper baking cups and colander. On the working space below this (and above my baking pans and eggs) I have my electric food mixer. In the cupboard to the right of the sink I keep my everyday dishes, sugar bowl, salt and pepper shakers, and uncooked

(More on page 20)

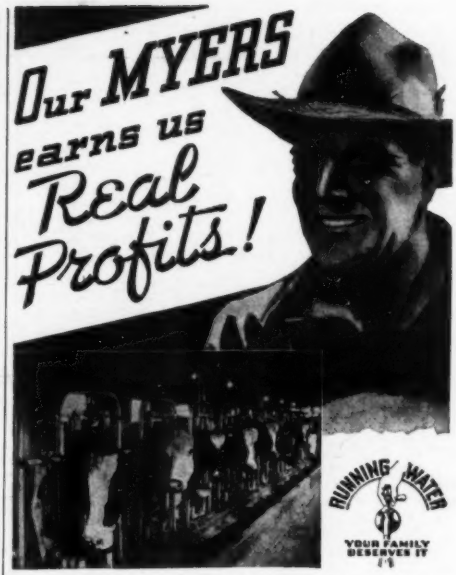


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Fig. 3012 **"Pump Builders Since 1870"**

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Hand Pumps	☐	Power Sprayers	☐
Pump Jacks	☐	Hay Unloading Tools	☐
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Name .....

Address .....

Take Off Your Hat to the MYERS

(*Here from page* 19)

cereals. (Our breakfast table is to the right of the cupboard.)

"Over both the refrigerator and stove I have cupboards 20 in. deep. I had the carpenter build them up to the ceiling (to avoid a dusty top), but had him put in a false top at a height 7½ ft. from the floor. In this 'false' top of my cupboard over the stove I screwed hooks and hung my frying and sauce pans. If the top had been higher than 7½ ft. I could not have reached the hooks without the aid of a chair. Then at the ends I put more hooks for the candy thermometer, meat cleaver and meat saw. At the front of this cupboard I have my coffee and pot, cereals to be cooked, tea, sugar, macaroni, and crackers; while I have extra sugar and flour to the back. It is true that I need a chair to reach the back of this cabinet, but I'd rather do that occasionally than handle over every day the seldom used articles.

"The cupboard over the refrigerator houses the trays, cookie sheets, and cake cooling racks in one part partitioned off for them. It also holds empty refrigerator dishes, the kitchen scale and above these, on a shelf, the waffle iron and pop corn popper.

"In the drawer of my electric stove I keep all covers to my cooking utensils."

MRS. GEORGE PIGOTT,
R. 1, DeKalb, Ill.

(*Here from page* 18)

dish pan, but you cannot put the roaster in water. You simply wash it off with a soapy cloth and then with a cloth wrung from clean water.

And after dinner is over, if you like, you can process eight jars of tomatoes in the roaster at one time, following the directions in your canning book.

• • •

SATURDAY'S PLAN for Sunday's Visiting

RIDE what roads you will these warm, sunny Sundays, it does seem as though most every farm yard has a herd of cars parked around the back door.

If Sunday brings crowds of hungry visitors to your house, you've probably learned to get ready for them long before the first dusty car turns its nose into the yard. But are you making full use of your new electric refrigerator to ease the job?

I know, I know. You got that refrigerator to preserve food properly and safely. Quite right. That's always the first function of a refrigerator. But as long as you have it, you might as well let it help you every way it can. And you'll turn that very fact to good use, if you will get food ready and keep it in the refrigerator until you are ready to use it.

For instance, the girls could get enough lettuce, celery, cucumbers and radishes picked and washed

Stay, of course! Everything's ready for dinner.

A covered meat tray beneath the chilling unit.

There is room for half a bushel of food in these two dishes.

Saturday morning for both dinner and supper. They will keep crisp and appetizing in your oiled silk zipper bag. You can just forget them until you are ready to turn the molded salad out on the plates. See! That's another thing you could make Saturday or even Friday. Chopped cabbage, celery, green pepper and a few chives in a lemon gelatine base makes a good salad—ready to serve.

If the folks brag about your hot rolls, make them Friday and put them in the refrigerator until Sunday morning. If you like fresh pies, make your crusts the day before and have it and the filling chilled and ready to put together in the twinkling of an eye. And with a dinner like this in the refrigerator you'll be able to produce a few twinkles, too.

I don't know what meat you plan, but you can put a good sized roast in the tray directly under the chilling unit, or in one of those new covered meat dishes, designed for some refrigerators. Meat to slice cold, meat for sandwiches, you can have it ready and waiting. Only be sure, when you bring the meat home on Saturday, that you unwrap it and put it into the meat tray, or loosely tucked in with waxed paper.

I don't know how you feel about vegetables. You'd probably rather bring them from the garden and dump them into the kettles to cook. I know

August Contest

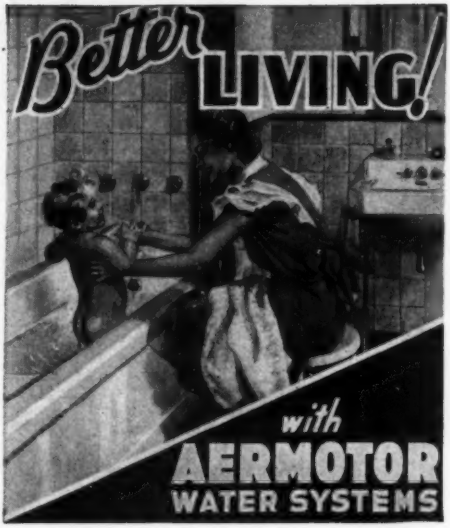
If you were buying a range what would you want it to have and do? That shouldn't be a hard question to ask a lot of women who cook. I am sure you all have ideas about the kind of a stove you'd make, if you were making stoves.

Think it all out and set it down on paper if you want a chance at a check for five dollars this month. We will pay that for the letter we publish.

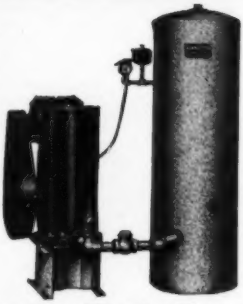
If a whole lot of good letters come in, and we use them later, we will pay a dollar a piece for each one we use.

Send your letter to me by August 20, please, Gail Meredith, 1026 Seminole Highway, Madison, Wisconsin.

It is convenient to reach anything on this sliding shelf.



When you think in terms of your family's comfort—of your own personal comfort, you will realize the importance of ***running water.*** Besides, running water lightens household duties and leaves many extra minutes to spend every day as you wish.



Enjoy these ***better living*** conditions to the fullest with the installation of an **Aermotor Electric Water System.** It is as modern as today, and with ***more*** exclusive features than you ever expected to find in a water system.

Compare an **Aermotor** point by point with any automatic system. You will find that ***only*** **Aermotor** offers you ***so much.*** Notice the quality and the extra value that is apparent everywhere. Still, with all these advantages, these outfits are offered at traditionally low **Aermotor** prices.

SEND for this BOOK

AERMOTOR COMPANY,
2500 Roosevelt Road, E-3
Chicago, Illinois

I am interested in an **Aermotor Water System.** Send "Facts" Book.

Name .....

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they are best that way, but if you do want to get them ready before hand, and feel that your own convenience, and an unflustered, unhurried hostess, are more important than that fine, elusive, delicacy of flavor, you can shell peas, lima or string beans, wash cauliflower, and scrape carrots in the early morning for supper, or—and here's the point that saves you Sunday time,—even over night.

A white sauce made Saturday morning can be added to the new potatoes in a jiffy. Salad dressings made way ahead, vegetables cooked and stored for salad make meal getting—at meal time—a quicker job.

Your refrigerator will keep right on doing its main job of keeping foods you must store cold enough to prevent their spoiling all the while you are giving it the extra task of taking care of tomorrow's dinner today. After all, it may be that the best way to get the most out of your refrigerator is to put more in.

For Fresh Fruit

Here is a recipe for a Fresh Fruit Cobbler you may wish to try while you still have a plentiful supply on hand:

Fresh Fruit Cobbler

2 cups fruit, peaches, cherries or berries
1 cup sugar (½ cup for canned fruit)
1 cup juice or water
1 tablespoon cornstarch
2 cups flour
4 teaspoons baking powder
5 tablespoons lard
1 teaspoon salt
1 cup milk

Prepare and cut fruit in pieces.
Add sugar and cornstarch which has been mixed with a little cold water.
Pour into buttered dish.
Sprinkle with cinnamon and dot with butter.
Cover with biscuit dough made of the flour, baking powder, lard, salt and milk.
Bake at 375 degrees one hour.

—I'm proud I am a farmer—

Lights Curtail Autumn Egg Slump

By ISRAEL REINSTEIN

Willimantic, Conn.

HAVING heard and read of the advantages and profitable uses of electricity on the farm, a group of us out here in Chestnut Hill applied to the power company for electricity. Last spring, the line was erected and our dreams began to materialize.

First, we put lights in the hen houses to increase daylight hours when days become shorter in fall and winter months. Two 40 watt bulbs for each coop of 200 laying hens were installed in some of our hen houses and in others, two 60 watt bulbs were used. The 60 watt lamps seem to be most effective. This fall season, with the usual slump in egg laying and with egg prices rising, the use of these lights from 3:30 A.M. to 5:15 A.M. decreased this slump 15 to 20%. With eggs retailing at 50c and 55c per dozen, the added income from increased egg production due to use of lights, was many times more than the cost of burning lamps in the coops. Burning lights in hen houses to lengthen the light of shorter autumn and winter days, brings more profits from the resulting increase in egg production and costs us only 1c a day for electricity per coop.

We use electricity to pump water for our farm and household needs, for lighting and for our appliances. We enjoy its convenience and profitable labor saving uses for the small cost of only 27c per day.

Burning 60 watt lamps in his hen house before daybreak has checked his autumn egg slump at least 15 percent at a time when eggs are high.

Cooling the Home

(*Here from page 8*)

A second fan was used to help circulate the air in the room. The cost of the parts exclusive of the fans, according to Mr. Hall, was approximately $5.00. This included the old radiator with hose connections soldered to it.

The cost of operating this cooling system was very slight. The water was needed to sprinkle the lawn and the fan would have been operated in the living room regardless of the cooling system. It is needless to say that Mr. Hall was quite enthusiastic as he told me of the results of this simple cooling system.

Very few cities have a water supply which remains cool enough in summer to be used for house cooling. On the contrary many farms where water is pumped from wells have a supply which remains below 50 degrees throughout the summer. Water which flows through a cooling radiator may be used for irrigating the lawn or garden or it may be carried to the stock tank.

Here is a case where the farm home with an automatic water supply system may have a convenience at low cost which is not available to most homes in the city.

Since warm summer air frequently contains humidity, this moisture will condense on the cold radiator. The action is very similar to the sweating of a glass of ice water in a warm room. A pan should be provided beneath the radiator to catch the drip.

When the unit is operating the water is allowed to run through the system at the rate of about twenty-five gallons per hour. The air in the room is cooled as it is circulated through the fins and tubes of the radiator by the fan. Conditions of the air at times are such that considerable moisture will collect and drip from the parts of the system carrying the cooling water. Provision should be made to prevent this moisture from damaging floors and furniture.

In a visit with Mr. Hall I could detect a bit of enthusiasm as he told me about the results of his simple cooling system. He did not hesitate to tell how the temperature of the cooled rooms stayed at 78 degrees while the outside temperatures of last summer were soaring over the 100 degree mark. The cost of operating the unit could not be considered because no additional expense was involved. The waste water from the unit was used for watering the lawn and shrubbery while the fan would have been used for relief from heat even if the cooling system had not been used.

Cool water is an important factor in the success of a cooling unit like this. If such a unit is practical in a city where a community water system is depended upon for water supply surely it would be more practical on a farm where cool, refreshing water can be pumped from the ground at less cost than it can be purchased in most cities. Then, too, we are constantly looking for practical ways of putting electricity to work on our farms.

It's an idea anyway.

Treat Garden Tool Handles

The wood handles of garden tools will retain their original smooth face, without splinters, and will be unaffected by perspiration if frequently dressed with raw or boiled linseed oil.—*W. C. Kreuger, New Jersey Extension Service.*

A Better UNIFLOW SHALLOW WELL SYSTEM FOR 50% LESS THAN

In 1925. Today you can buy a 250-gallon per hour Uniflow Shallow Well Pump and 42-gallon tank complete with accessories for as little as $75.00 assembled—ready to hook up—with smaller tanks as low as $55.00. Thousands are in service.

Enjoy the benefits of a private water system that will deliver 1000 gallons of water per Kilowatt of electricity.

ONE OF First ELECTRIC PUMPS

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ELECTRIC REFRIGERATORS
UNIFLOW MFG. CO
1503 EAST LAKE ROAD
ERIE, PENNSYLVANIA
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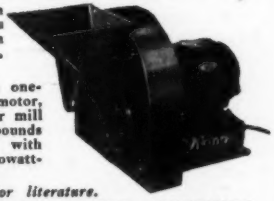
WATER SOFTENERS

Farmers Everywhere Endorse VIKING HAMMER MILL

Grind your own feed . . . as you want it . . . when you want it . . . at low cost.

Powered with a one-half horsepower motor, the Viking hammer mill grinds up to 700 pounds of feed per hour with less than one kilowatt-hour per hour.



Write for literature.

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Jackson, Michigan, U. S. A.

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● All the features that have made DAZEY hand churn famous for generations made still more efficient by POWER. Unbelievable savings of time and labor. Priced remarkably low. Sold wherever there are rural power lines. Write us for particulars.

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DAZEY ELECTRIC CHURNS

What? How? Why?

Have you read all the manufacturers' advertising in this magazine? It will tell you What, How and Why electrical equipment can help you.

A review of the leading applications for electricity listed below should help you to determine what appliances should best serve to improve operations on your farm.
If our advertisers cannot give you all data and information you require, just fill out and send us the handy coupon at the bottom of this page. This service is FREE.

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___Feed Mixers
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___Insect Killers
___Motors
___Threshing Machines
___Ultra Violet Light
___Ventilators
___Wood Saws

For Dairy Farm

___Animal Clippers
___Bottle Washers
___Churns
___Cream Separators
___Dairy Sterilizers
___Milk Coolers
___Milking Machines

For Poultry Farm

___Brooders
___Burglar Alarms
___Drink. Fount. Warmers
___Egg Cleaners
___Egg Graders
___Incubators
___House Lighting

For Truck & Fruit Farm

___Fruit Graders
___Fruit Polishers
___Fruit Washers
___Irrigation Equipment
___Light for Plant Growth
___Soil Heating
___Stationary Spray Plants
___Vegetable Washers

For Farm Shop

___Bench Saws
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Without cost to me, please have manufacturers send complete information on the following Electrically Operated Equipment which I am thinking of buying:

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My name is .....
Address .....
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ON THE AIR

Conducted by JEROME J. HENRY

A Gal Who Wants to Gain

LUCILLE MANNERS is not bothered by a diet. She wants to gain weight, honest.

The radio star tips the scales at 110 pounds and she wants the figure a few pounds higher. Her favorite dish is potato pancakes and apple sauce. She will frequently go to restaurants which are far off the beaten path to get them.

Late at night the trim young soprano frequently likes to treat herself to a thick steak. She does considerable cooking herself in the ample kitchen of her apartment where she tries to emulate the dishes her mother and grandmother excelled in. She likes best of all to concoct new salads.

The real secret of her constant weight is that she does not gain even though she tries. So she is able to enjoy a splendid meal without worrying about a double chin.

• • •

Good, if She Remembers

IF she remembers a tune while digging in her garden or having her hair waved, it's a sure sign to Connie Boswell that the song, whether she likes it or not, is going to be a hit. All it has to do is "repeat" in her mind.

Acting on these hunches the warm-voiced girl from the deep south, singing star of the CBS network, has shown uncanny ability to pick winners in the popular songs sweepstakes.

"I do recordings at least four months in advance," she says, in explaining how she manages to be so lucky in picking hits. "I hear these new songs through, work over them on the piano, and if they keep coming back when I'm doing things I like to do, I know I have something."

Her all time high in picking successes occurred recently when out of eight songs submitted she picked seven that turned out to be hits. But "Martha," the newest Boswell craze, she picked for "swinging" because she adored the Caruso records of the opera as a child.

Connie, once just a member of the famous Boswell sisters trio, is now definitely "on her own" in the entertainment field. Again she is demonstrating that spark of originality in modern music which brought her and her sisters to fame.

MAKES POULTRY LIGHTING PAY

Profitable lighting of poultry houses for longer egg-laying days requires:
Absolute regularity of operation—
Complete dependability of action—
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A lifetime of accurate service.

PARAGON POULTRY HOUSE TIME SWITCHES

Are the only controls that meet these 100%, because Paragons are standard industrial switches, redesigned for poultry house lighting. Dependable, heavy-duty motors; cut gears; patented "star-wheel" snap action switches; clear-line quick set dial; 15 min. automatic dim roosting period. A truly high class instrument for only $18.50. Write for FREE Bulletin 838 on poultry house lighting systems.

PARAGON ELECTRIC CO., 407 S. Dearborn, CHICAGO

Questions and Answers

Cold Storage Plant

Question: *Can a family size cold storage plant as shown on p. 17 of the May issue be hooked onto the house refrigerator?* B. E.

Answer: No. Compressors on household boxes are designed for the refrigerator they cool, and no more. Large boxes should have compressor units of ample size to give satisfactory service.

Charcoal Filter

Question: *Will you please tell me how to construct a charcoal filter such as shown in the April issue of* ELECTRICITY ON THE FARM.
B. A. C. and P. F.

Answer: Charcoal filters are described in Farmer's Bulletin No. 1448; blueprints may be obtained from the Bureau of Agricultural Engineering, U. S. Dept. of Agriculture, Washington, D. C.

Defrosting a Refrigerator

Question: *I read in May about defrosting a Frigidaire. I would like to ask if ice trays should be refilled with water each time, or if this is necessary.* R. F.

Answer: It is not necessary to refill your ice trays when defrosting your refrigerator. The ice in the trays should not melt completely and refreezing would take less power than filling with fresh water. If the ice is not used for a long period it may absorb some odors and flavors from food stored in the refrigerator. In this case it would be well to empty and refill the trays.

Motor Problems of Shallow Well Unit; Rewinding Motor

Question: *I have a single action shallow well pump of 200 gallons per hour, run by a ⅛ H.P. motor which gets hot on a long run. It raises water about 6 feet straight up to the pump and delivers it from 25 to 40 pounds pressure.*

Would a larger motor on this pump use any more current?

Would increasing the speed increase the volume without seriously decreasing its efficiency?

How fast should it run?

Can a 32 volt D. C. motor be rewound for 115 volt A. C., and if so what is the principal change needed? F. D. R.

Answer: A ¼ H.P. motor on your pump would use practically the same amount of power as the smaller one.

Manufacturers usually operate their water system pumps at the most desirable speed. We would not advise speeding up these pumps without first presenting your problem to the manufacturer. He will be glad to advise you.

To rewind a 32 volt, D. C. motor for use on 110 volt circuits involves a complete rebuilding job which would probably cost about as much as a new motor.

It's easy to understand that an automatic electric water supply system is the very heart of all farm life.

Health, happiness, comfort and convenience depend on a system that will stand up under the most severe service. By using the highest quality materials, skilled workmanship and the turbine principle of pumping, Westco has built a system guaranteed to give year after year of efficient service. Westco is truly the world's simplest electric pump, built in all sizes, and available at prices suitable to everyone's pocketbook.

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KEEP THE PROFIT BY GRINDING FEED WITH BELL HAMMER MILLS

2 sizes—1 to 5 H.P.
Small Grains, Ear Corn and Roughages

Greatest Capacity per K.W.H.

SELLS AT A NEW LOW PRICE

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AUTOMATIC ELECTRIC DAIRY WATER HEATER

Hot Water 24 Hours a Day — Cheap, Clean and Efficient—No Odors, Smoke or Fumes — Fire Hazard Eliminated. Heaters Tested Under Actual Use on the Dairy Farm Are Absolute Proof That the Losee Is Extremely Economical.

Meets All Health Requirements

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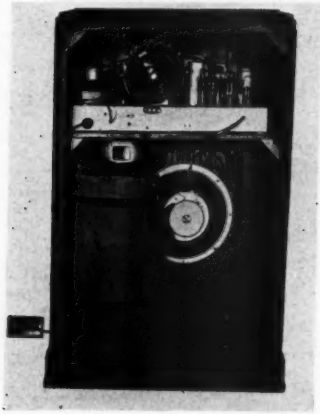
Hebron, Ill.

Reviewed by T. E. HIENTON

Names and addresses of manufacturers of the articles described in this column will gladly be furnished upon request to What's New Department, ELECTRICITY ON THE FARM, *24 West 40th Street, New York, N. Y.*

"Beamascope" for Radios

The General Electric Co. has recently announced the "beamascope," a substitute for the old outdoor radio antenna. The "beamascope" antenna is built



into the set and requires no connection to outside wires or grounds. When first installed it is set in the position of minimum noise pick-up and thereafter needs no adjustment. The advantages claimed for the "beamascope" are noise elimination, better reception from strong stations and ease of proper installation. It is not intended particularly for far distant stations.

New Bulletins

ELECTRIC PIG BROODERS, Bulletin 618, University of California, Agricultural Experiment Station, Berkeley, California, December, 1937.

LIGHTING THE FARM HOME, Bulletin 192, Ohio State University, Agricultural Extension Service, Columbus, Ohio, January, 1938.

IRRIGATED GARDENS, Circular 161, North Dakota Agricultural College, Extension Service, Fargo, North Dakota, March, 1938.

MODERN CONCRETE REFRIGERATED FRUIT STORAGES. An 8 p., letter size, illustrated booklet with drawings giving storage requirements for different fruits and vegetables, insulation requirements, working plans, bill of materials, refrigeration and management considerations and operating costs. Available from Portland Cement Association, 33 West Grand Ave., Chicago.

TRANSFORMERS FOR RURAL LINES. "Why C. S. P. Transformers for Rural Service"" is the title of a 12-page illustrated booklet recently published by Westinghouse Electric & Manufacturing Company.

The booklet describes the features of these transformers. They are completely self-protected against lightning, short circuits, and burnouts from overloads. Low installation cost and maintenance are provided because of no crossarms, fewer wiring connections and leak-proof tank.

ELECTRIC MOTORS FOR THE FARM. Farm profits and savings resulting from the use of electric motors on the farm are listed and analyzed in a new 12-page General Electric publication, GED-664. Every important use for motors on the farm is analyzed in the "summarized data guide chart," which briefly and simply sets forth the type, rating, and power consumption of the motor recommended for performing each of about 70 farm jobs. Approximate prices of many popular motors and control units are also included.

The booklet contains numerous illustrations of motors installed on farm jobs. Selection of the proper motor is simplified by the concise tabulation of farm jobs and motor types. The motors covered are those most commonly used, including split-phase, capacitor, and repulsion-induction motors, as well as the portable farm motor.

George Hudson Bought a Milker

(*Here from page* 10)

ing, diseases can be spread. Machines, however, are not responsible for disease spreading.

Nearly every agricultural experiment station now has dependable research information on milking machines, their care and operation, to produce clean milk and keep a normal, healthy herd of cows. If labor has reasonable value, a milking machine is more justifiable on a herd of ten cows or more.

Naturally, the increasing demand for cleaner and cleaner milk makes it imperative that mechanical milkers receive proper care, and that means they must be both carefully washed and thoroughly sterilized, not once in a while, but as often as they are used. In this connection Cornell University says. "Rinse the milker immediately. The first and all important rule is: never let a milking machine get dirty. Milk is clean as it comes from the cow. It does not dirty the milker unless it is allowed to stay in the milker and dry on. Thus the first step in never letting the milker get dirty is to rinse it immediately after the last cow is milked, not 15 or 20 minutes later or after breakfast, but immediately with cold water.

"Sterilization cannot be perfectly effective unless the milking machine parts are first free from all milk and dirt. Old milk and dirt protect the bacteria during sterilization. These bacteria cause the contamination at the next milking."

CLASSIFIED ADVERTISING

LYON FLY ELECTROCUTORS ARE CHEAPER THAN SPRAY. Safe, Effective, Economical, Guaranteed. Free circulars. Also catalog of largest all-electric poultry supply lines. Proven money-saving brooders, parts for homemade equipment, burglar alarms, ventilators. Advisory service without obligation. Write today. LYON RURAL ELECTRIC CO., Dept. EF, San Diego, California.